

Alaskan Way Viaduct and Seawall Replacement Program Update

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Guiding Principles

The three executives agreed that any solution for the Alaskan Way Viaduct needed to be grounded in a commitment and integration across six guiding principles:

- Improve public safety.
- Provide efficient movement of people and goods now and in the future.
- Maintain or improve downtown Seattle, regional, the port and state economies.
- Enhance Seattle's waterfront, downtown and adjacent neighborhoods as a place for people.
- Create solutions that are fiscally responsible.
- Improve the health of the environment.

Bored Tunnel Hybrid Alternative

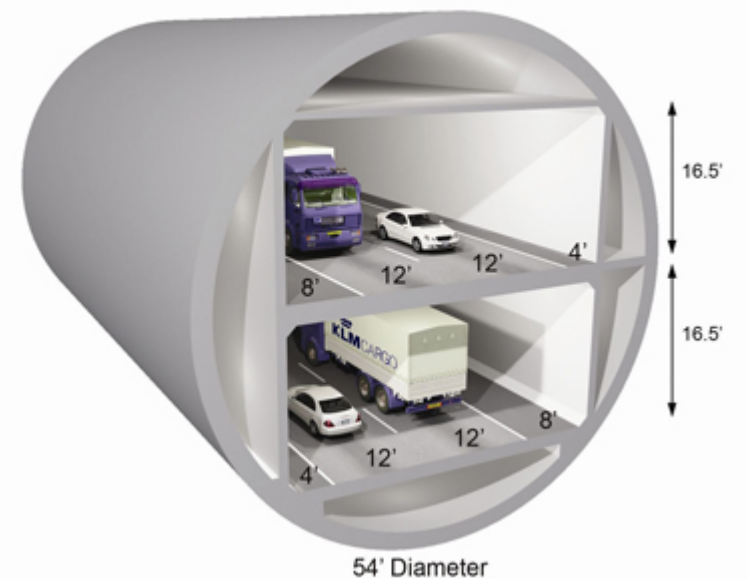
On Jan. 13, 2009, Governor Gregoire, King County Executive Sims and Mayor Nickels announced that the bored tunnel hybrid alternative was their preferred solution to replace the central waterfront portion of the viaduct.



Bored Tunnel Hybrid Alternative

SR 99 Tunnel:

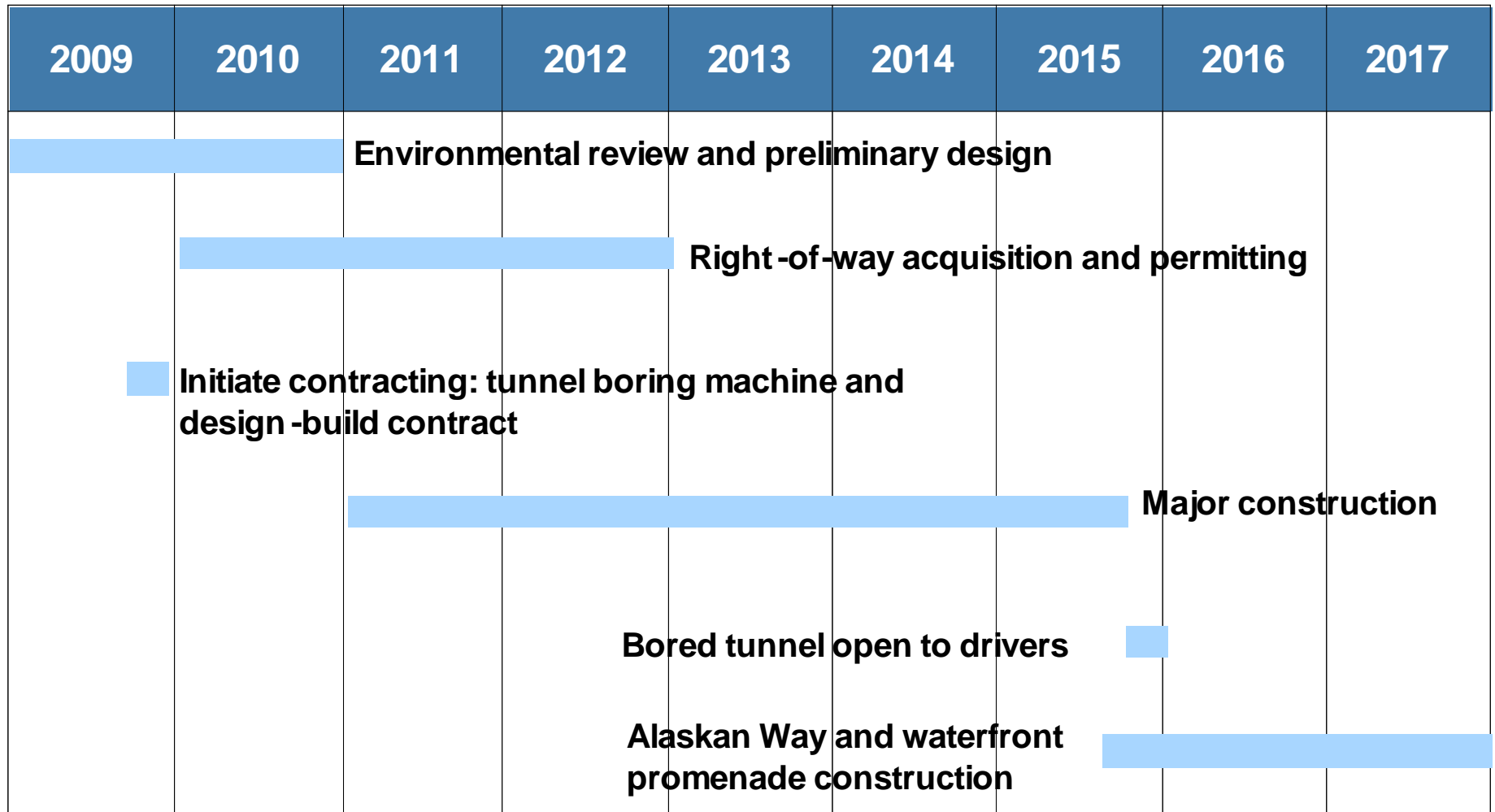
- 54' diameter, single bore tunnel.
- Two lanes of traffic in each direction.
- Approximately 1.7 miles long.
- Between 30 and 200 feet underground.
- Carries approximately 85,000 vehicles each day through downtown Seattle.
- Construction is expected to begin in 2011 and be open to drivers in 2015.



Alaskan Way surface street:

- Four-lane roadway with two lanes in each direction.
- Carries approximately 25,000 vehicles per day.

Bored Tunnel Timeline

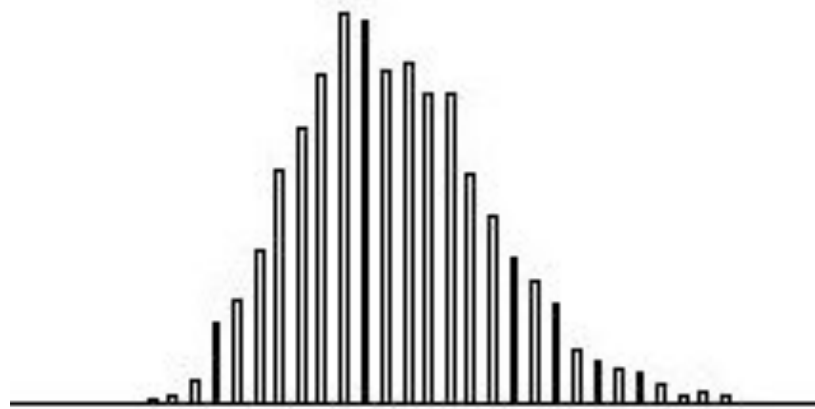


SR 99 Bored Tunnel Cost

Risk-based estimating nationally recognized as a best practice for mega-projects

	Cost (Millions)
Construction estimate (bored tunnel only)	\$944
Construction management and administration	\$118
Preliminary and final design	\$118
Contingency	\$150
Risk	\$268
Escalation (per Global Insight)	\$166
Right-of-way costs	\$149
TOTAL	\$1,913

CEVP-type Cost Range



Most probable cost (range)

- **20%** chance the cost is less than **\$1.2 billion**
- **60%** chance the cost is less than **\$1.9 billion**
- **80%** chance the cost is less than **\$2.2 billion**

State Funding

Tolls are being considered as a funding source for the bored tunnel alternative.

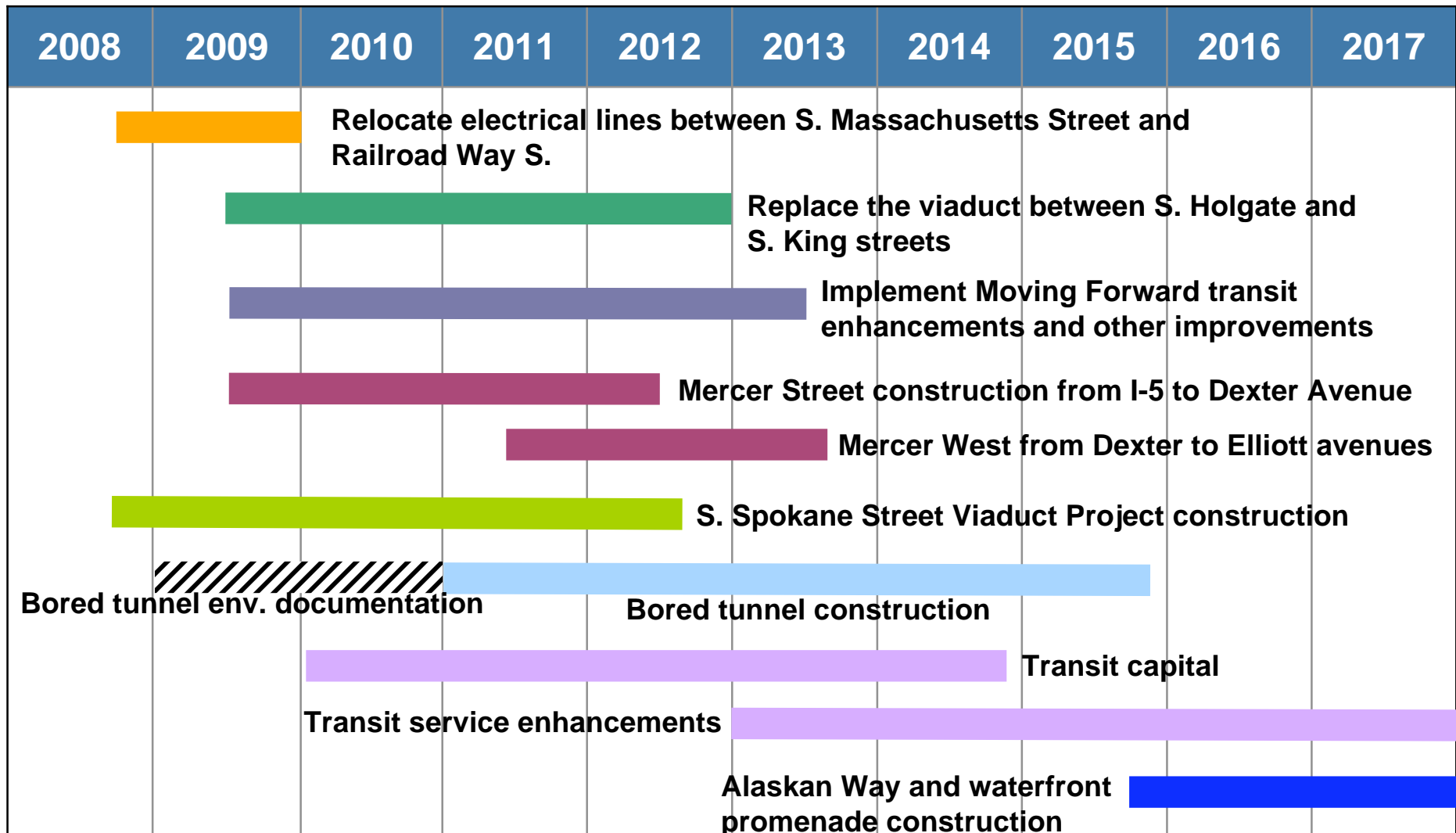
Tolling provisions of S-1235:

- The Alaskan Way Viaduct replacement project finance plan must include state funding as appropriated in the 2007-2009 omnibus transportation appropriations act not to exceed \$2.4 billion and must also include at least \$400 million in toll revenue.
- These funds must be used solely to build a replacement tunnel and to demolish the existing state route number 99 Alaskan Way viaduct.
- The department of transportation must prepare a traffic and revenue study for a SR 99 deep bore tunnel for the purpose of determining the facility's potential to generate toll revenue.
- The department shall regularly report to the transportation commission regarding the progress of the study for the purpose of guiding the commission's toll setting on the facility.



Central Waterfront

Program Timeline



*Seawall construction will take place before Alaskan Way and promenade construction

Fiscal Responsibility

	Proposed project implementation responsibility				Costs
	State	King County	City of Seattle	Port of Seattle ***	
Moving Forward projects and prior program expenditures	\$600 million			\$300 million	\$900 million*
SR 99 bored tunnel	\$1.9 billion**				\$1.9 billion
Alaskan Way surface street and promenade	\$290 million		\$100 million		\$390 million
Central seawall			\$255 million		\$255 million
Utility relocation			\$250 million		\$250 million
City streets and transit pathways		\$25 million	\$190 million		\$215 million
Transit infrastructure and services		\$115 million	\$135 million		\$250 million
Construction transit service	\$30 million	\$50 million			\$80 million
Total	\$2.82 billion	\$190 million	\$930 million	\$300 million	\$4.24 billion
Transit operations annual cost		\$15 million			\$15 million

* Reflects cost savings from Moving Forward program realized by not repairing the viaduct from Lenora to Battery Street Tunnel and not completing the second phase of fire and life safety upgrades to the Battery Street Tunnel.

** Reflects the most likely cost based on a conceptual design. The potential cost range is between \$1.2 billion and \$2.2 billion.

*** Agreement in concept for up to \$300 million subject to Port of Seattle Commission review and approval.

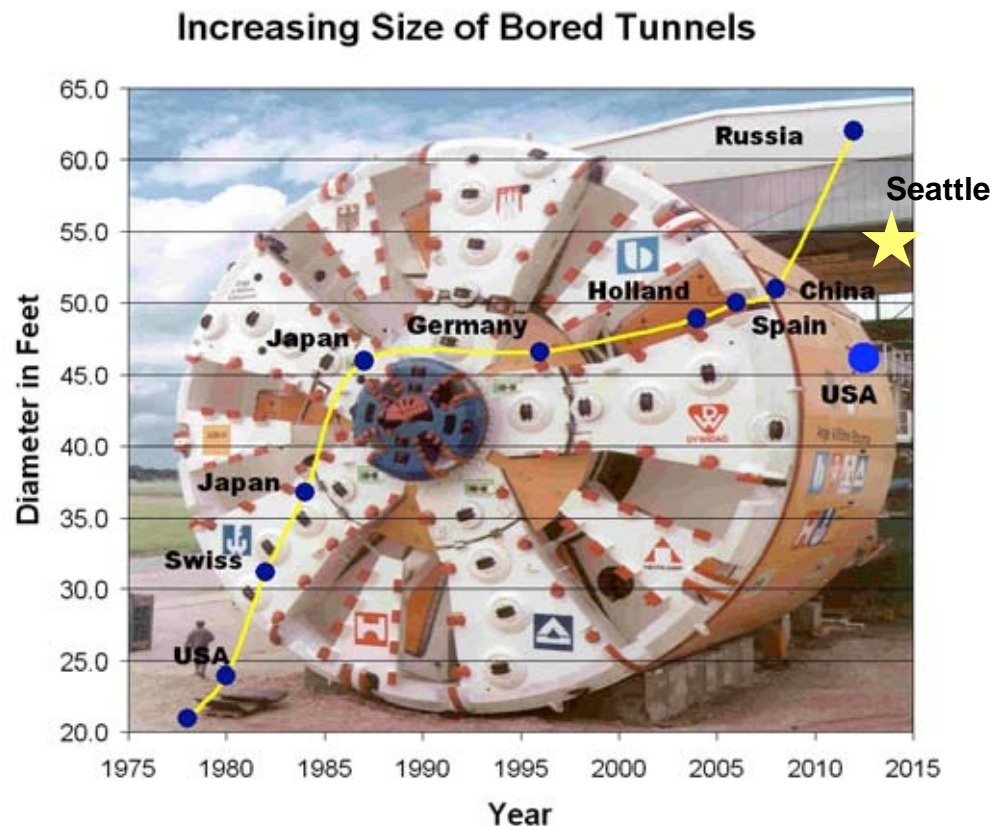
Transit is Critical to The Success of The Bored Tunnel Hybrid

- Systems approach
- Enhanced service to accommodate demand
- Access to downtown
- Construction mitigation
- Environment



Tunneling technology

- Tunneling technology is rapidly advancing, with tunnel boring machines as large as 62 feet in diameter on order.
- Successful tunnel boring machine projects:
 - Sound Transit Beacon Hill: 21 feet in diameter
 - Hamburg and Moscow: 46.6 feet in diameter
 - Madrid: 50 feet in diameter
 - Shanghai: 50.6 feet in diameter



Tunneling in Seattle Soils

Numerous tunnel machines, including several in Seattle, have successfully excavated ground conditions similar to those anticipated. Over 150 tunnels have been constructed in Seattle since 1890, mostly in glacial soils.

Examples include:

- Sound Transit Beacon Hill:
 - Glacial sand, silt, clay and till up to 160-ft depth.
 - Soils similar to hard/dense soils along most of proposed alignment.
- Denny Way Combined Sewer Overflow:
 - Glacial sand, silt, clay and till up to 160-ft depth.
 - Soils similar to hard/dense soils along most of proposed alignment.



Bored Tunnel vs. Previous Cut-and-Cover Tunnel Alternative

Bored tunnel hybrid alternative	Previous cut-and-cover tunnel alternative
<ul style="list-style-type: none">• Stacked with two lanes in each direction.• Constructed under First Avenue.• Top of tunnel is 30 to 200 feet below the surface.• Viaduct can stay open to traffic while the tunnel is being built.• Construction is estimated to take 4.5 years.• Limits impacts to waterfront businesses.	<ul style="list-style-type: none">• Stacked with three lanes in each direction.• Constructed along the waterfront.• Top of tunnel is 10 feet below the surface.• Viaduct would have been closed for 3.5 years under the “short” construction plan.• Construction was estimated to take 7 years under the “short” construction plan.• Would cause major impacts to waterfront businesses.

SR 99 Bored Tunnel vs. Boston's Big Dig

More differences than similarities

Boston's Big Dig Central Artery/Tunnel

Substantially larger and more complex including:

1. Very disruptive cut-and-cover tunnel through the central city under the existing elevated roadway and 2 subway lines.
 2. A signature cable-stayed bridge over the Charles River, cut-and-cover through South Boston.
 3. Two sets of immersed tubes under the harbor to the airport and the complex interchange with very poor geotechnical conditions.
- Project was disruptive and required extensive traffic management and mitigation.
 - The initial project cost number did not include added scope, mitigation and environmental requirements, inflation and appropriate allowance for risk and escalation.
 - The Central Artery/Tunnel did not have a strong agency management or consistent leadership throughout the course of the project.
 - As a result, the project was delivered grossly over budget and years behind schedule.

	Bored Tunnel & South End Project	Big Dig Projects
Total Project Length	2.8 miles	8 miles
Number of tunnels*	1	3
Length of tunnels*	2 miles	5 miles
Total lane miles	12.8 miles	>161 miles

*Boston Big Dig tunnels included cut-and-cover, immersed tubes, jacked tunnel and other special tunneling methods.

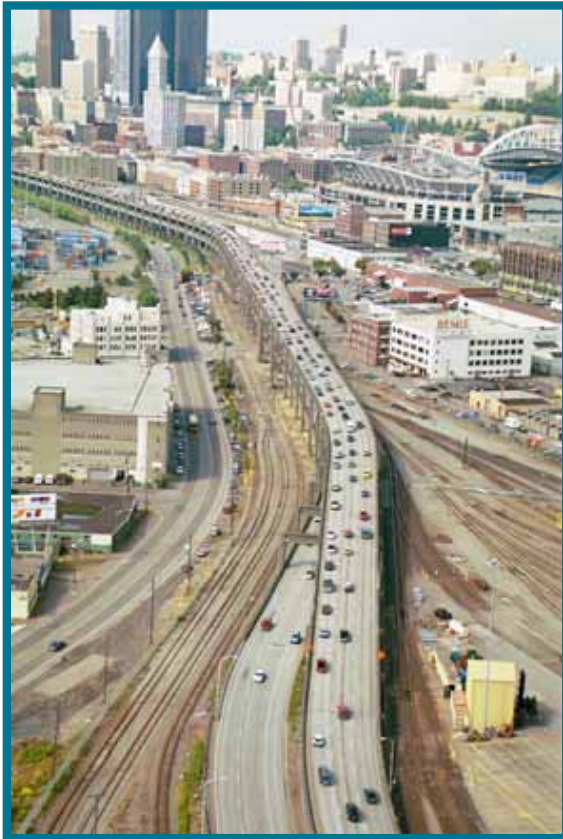
SR 99 bored tunnel

- Project will run 30-200 feet underground minimizing traffic disruption and impacts to the waterfront and downtown
- WSDOT uses the CEVP® process on all state projects over \$100M to ensure costs are complete, reasonable, defensible and appropriately represent risk and uncertainties.
- WSDOT is a strong owner in policy, management and technical capability and Governor Gregoire is project authority
- WSDOT will maintain this strength over the life of the project, assisted by eminent private-sector engineers and contractors
 - Accountable to the public, Governor and Legislature

Next Steps

- Get legislative approval for necessary funding.
- Work with the city, county and port to coordinate project implementation.
- Complete environmental review process.
- Develop additional preliminary engineering and soils exploration.
- Meet with community groups and businesses to finalize design.

Alaskan Way Viaduct and Seawall Replacement Program



Follow our progress: www.alaskanwayviaduct.org